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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/267,781 | 03/15/1999 | DENNY M. LIN | 36J.P191 | 7568 |

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NEW YORK, NY 10112

EXAMINER

WHIPKEY, JASON T

| ART UNIT | PAPER NUMBER |
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2612

DATE MAILED: 07/16/2003

13

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/267,781

Applicant(s)

LIN, DENNY M.

Examiner

Jason T. Whipkey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-5 and 7-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-5 and 7-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 May 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 05 May 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

1. The proposed substitute sheets of drawings filed on May 5, 2003, have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

Response to Arguments

2. Applicant's arguments filed May 5, 2003, have been fully considered but they are not persuasive.

Regarding claims 2 and 7, the examiner believes Applicant is using an overly narrow interpretation of the claim language. The relevant limitation in claim 2 is:

wherein said means for duplicating image data comprises charge or voltage duplicating circuitry that obtains multiple outputs for each pixel in the overlap region, and wherein said duplication circuitry provides each of the multiple outputs to individual ones of said output pipelines that border on the overlap region.

In Figure 3, Doran shows that the contents of memory 32-A are sent to memory 32-B, wherein pixel data T and B on the borders of divided sections are *duplicated* when placed in memory 32-B. If one voltage or charge associated with, for example, memory location 224 is placed in the channel 1 *and* channel 2 areas of memory 32-B, it is inherent that some sort of duplication circuitry duplicates the voltage or charge.

Claims 3 and 8 may be treated like claims 2 and 7, respectively. Additionally, Doran shows in Figure 3 that memory 32-B ("an intermediate buffer") holds, *inter alia*, the duplicated pixel data for further processing.

Regarding claims 5 and 10, contrary to Applicant's arguments, the examiner does not rely upon Doran to reject these claims. McCubbrey clearly shows in figures 1 and 3 and in column 4, lines 51-67, that pixel-transferring connections 60 and 62 are used to transfer duplicate edge pixels to adjacent pipelines.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-4 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCubbrey in view of Tromborg and further in view of Doran.

Regarding claims 2 and 7, McCubbrey discloses an image processing system that may obtain an image matrix from a television camera (column 3, line 68, through column 4, line 2). The image is divided into three sections for processing by pipelines 12, 14, and 16, which are shown in Figure 1 (column 3, lines 64-67). Boundary image data may be duplicated by transferring pixels between stages 18, 24, and 30 via

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connections 60 and 62 (column 4, lines 51-67). McCubbrey teaches that stages 18-32 are processors (column 3, lines 37-42). Stages 18-32 are arranged in pipelines 12, 14, and 16, as shown in Figure 1.

McCubbrey is silent with regard to the type of sensor array used in the television camera.

Tromborg discloses a monolithic one- or two-dimensional image sensor (column 3, lines 5-10). As shown in Figure 2, the transfer shift register is divided into multiple segments 141 to 14n, which provide parallel outputs. As stated in column 3, lines 61-62, "Each of these outputs may then be supplied to a separate processor."

As stated in column 4, lines 48-54, the advantage to supplying parallel outputs from the imaging array is that multiple low cost, low performance processors may be used in place of a single high cost, high performance processor. For this reason, it would have been obvious at the time of invention to have McCubbrey's image processing system obtain image data from a camera using Tromborg's image sensor.

Both McCubbrey and Tromborg are silent with regard to duplicating data for overlap regions.

Doran discloses a system used to process images at a high speed. As shown in Figure 3, splitter 32 receives scan line pixel data 30 from scanner 18 and divides them into channels 30-1 through 30-4 (column 8, lines 52-60). Overlap data T and B are added to the beginning and end of each channel's image data, wherein the overlap data come from adjacent channels (column 8, line 61, through column 9, line 14). Therefore, overlap data B from channel 30-1-1 and T from channel 30-2-1 are available to

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channels 30-1-1 and 30-2-1. Each channel is then processed in pipeline form, as shown in Figure 1.

As stated in column 10, lines 12-18, the advantage to duplicating image data for use in multiple pipelines is that the formation of "seams" between image segments can be prevented. For this reason, it would have been obvious at the time of invention to have McCubbrey's image processing system include pixel-duplicating means.

Claims 3 and 8 may be rejected using the rationale used for claims 2 and 7. Additionally, McCubbrey teaches that stages 18-32 are processors (column 3, lines 37-42) that are arranged in pipelines 12, 14, and 16, as shown in Figure 1.

Doran also teaches that all data — including the duplicate overlap data — are stored in memory unit 32-A or 32-B until all data are received, at which point the data are transferred to the processing pipelines (column 33, lines 21-33).

Regarding claims 4 and 9, Doran teaches that scanner 18 may be a conventional charge-coupled device (column 6, lines 20-21). Doran is silent with regard to whether buffer memories 32-A and 32-B are located on the same chip as scanner 18.

Official Notice is taken that image pickup devices are often placed on chips separate from their associated processing circuitry. An advantage to doing so is that a custom image pickup chip is not necessary for each application, thus reducing design costs. For this reason, it would have been obvious at the time of invention to have Doran place buffer memories 32-A and 32-B on a chip separate from scanner 18.

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5. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCubbrey in view of Tromborg.

Regarding both claims, McCubbrey discloses an image processing system that may obtain an image matrix from a television camera (column 3, line 68, through column 4, line 2). The image is divided into three sections for processing by pipelines 12, 14, and 16, which are shown in Figure 1 (column 3, lines 64-67). Boundary image data may be duplicated by transferring pixels between stages 18, 24, and 30 via connections 60 and 62 (column 4, lines 51-67). McCubbrey teaches that stages 18-32 are processors (column 3, lines 37-42). Stages 18-32 are arranged in pipelines 12, 14, and 16, as shown in Figure 1. As shown in Figure 3, pixel overlapping occurs among pipelines, with pixels 4, 5, 8, and 9 transferred between stages, for example.

McCubbrey is silent with regard to the type of sensor array used in the television camera.

Tromborg discloses a monolithic one- or two-dimensional image sensor (column 3, lines 5-10). As shown in Figure 2, the transfer shift register is divided into multiple segments 141 to 14n, which provide parallel outputs. As stated in column 3, lines 61-62, "Each of these outputs may then be supplied to a separate processor."

As stated in column 4, lines 48-54, the advantage to supplying parallel outputs from the imaging array is that multiple low cost, low performance processors may be used in place of a single high cost, high performance processor. For this reason, it would have been obvious at the time of invention to have McCubbrey's image processing system obtain image data from a camera using Tromborg's image sensor.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason T. Whipkey, whose telephone number is (703) 305-1819. The examiner can normally be reached Monday through Friday from 9 A.M. to 6:30 P.M. eastern daylight time, alternating Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R. Garber, can be reached on (703) 305-4929. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communication and (703) 872-9315 for After Final communication.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office, whose telephone number is (703) 306-0377.

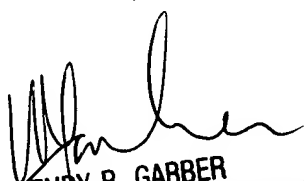
Response to this action should be mailed to:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

or faxed to the appropriate number above for communications intended for entry. (For informal or draft communications, please label "**PROPOSED**" or "**DRAFT**".)

Hand-delivered responses should be brought to the sixth floor receptionist of Crystal Park II, 2121 Crystal Drive in Arlington, Virginia.

JTW
JTW
July 14, 2003


WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
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